What I claim is:

1. A method for making nanoscale powders comprising:

selecting a precursor mixture comprising at least one metal containing substance;

treating the precursor mixture with at least one precipitating agent in a flow reactor system such that the axial velocity, axial length and axial dispersion coefficient in the flow reactor system yield a plug flow index of more than 5;

wherein the treatment of the precursor mixture with the precipitating agent precipitates nanoscale powders comprising at least one metal containing precursor;

wherein the precipitated nanoscale powders are washed with a second metal containing substance; and

wherein the washed nanoscale powders are calcined to yield nanoscale powders.

2. The method of claim 1 wherein the precursor mixture comprises at least two metals.

3. The method of claim 1 wherein the precipitated nanoscale powder comprises hydroxide.

4. The method of claim 1 wherein the flow reactor system has a plug flow index greater than 50.

5. The method of claim 1 wherein the flow reactor system has a plug flow index greater than 500.

6. The method of claim 1 wherein the second metal containing substance comprises an organometallic.

7. The method of claim 1 wherein the calcination is performed in air.

8. The method of claim 1 wherein the calcination is performed in an oxidizing atmosphere.

9. The method of claim 1 wherein the calcination is performed in a reducing atmosphere.

10. The method of claim 1 wherein the calcination is performed in a reactive atmosphere.

11. The method of claim 1 wherein the calcined nanoscale powders comprise oxygen.

12. The method of claim 1 wherein the calcined nanoscale powders comprise nitrogen.

13. The method of claim 1 wherein the calcined nanoscale powders comprise carbon.

14. The method of claim 1 wherein the calcined nanoscale powders comprise metal.

15. The method of claim 1 wherein the calcined nanoscale powders comprise non-metal.

16. A device comprising the nanoscale powder prepared using the method of claim 1.

17. A product comprising the nanoscale powder prepared using the method of claim 1.

18. A coating comprising the nanoscale powder prepared using the method of claim 1.

19. The method of claim 1 wherein the second metal containing substance comprises an element selected from the group consisting of: Ti, Zr, Si, Zn, Cu, Sn, Ce, Y and Al.

20. A dispersion comprising the nanoscale powder prepared using the method of claim 1.